

QUICKSTART GUIDE - THREE BODY

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The Three Body is a phase and frequency modulation toolkit, designed to bring digital techniques to an analog interface.

It consists of three oscillators which can be used independently but which have normalised connections to facilitate exploration and improvisation.

**Controls** - Controls affected by the FREE/RATIO state, works the same for each oscillator.

CONTROL	FREE	RATIO
COARSE/MULT	Coarse pitch control	Tracking multiplier
FINE/DIV	Fine pitch control	Tracking divider

Modulation controls are the same for the outer oscillators, but the inner oscillator has an extra phase input and index control (VCAs) on phase modulation instead of frequency

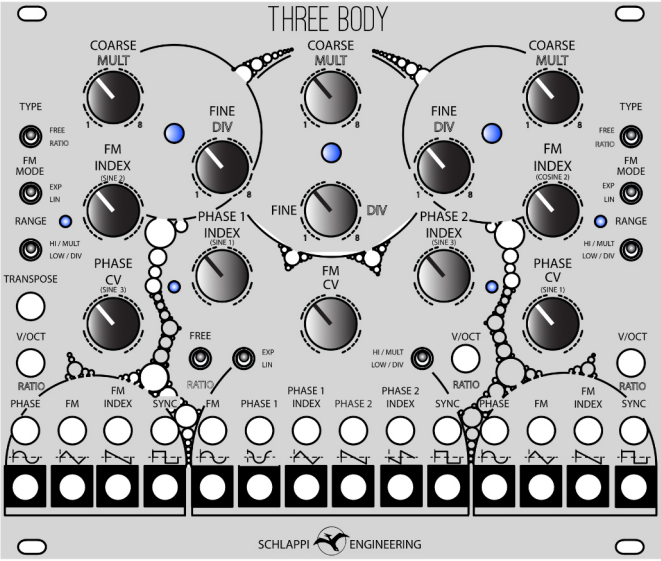
CONTROL	DESCRIPTION	Oscillator
PHASE CV	Attenuator over phase input	outer
PHASE INDEX 1	Attenuator for CV control over amount of phase input 1	inner
PHASE INDEX 2	Attenuator for CV control over amount of phase input 2	inner
FM CV	Attenuator for amount of FM input	inner
FM INDEX	Attenuator for CV control over amount of phase input	outer

**Outputs** - All outputs are bipolar, 10V peak to peak, and affected by the phase or frequency modulation of the related oscillator.

LABEL	NAME	DESCRIPTION
	SINE	Sine wave output, modulation adding to the phase
	COSINE	Cosine output, 90 degrees offset ahead of sine output with modulation subtracting from the phase. center oscillator only
	TRIANGLE	Triangle wave output
	SAW	Saw wave output
	COSAW	Saw wave 90 degrees offset ahead of saw output with modulation subtracting from the phase. center oscillator only
	SQUARE	Square wave output

**States** - The heart of the three body is a digital logic state machine with 8 states (per oscillator) defined by three switches (per oscillator). This determines whether the oscillator is free, operating much like an analog oscillator, or tracking in a ratio mode as is necessary for Chowning style digital FM. It also determines the behavior of the VOCT/RATIO CV, frequency modulation, and sync inputs.

FREE/RATIO	EXPO/LIN	LOW/HIGH/DIV/MULT	DESCRIPTION
FREE	EXPO	LOW	LFO with exponential frequency modulation
FREE	EXPO	HIGH	VCO with exponential frequency modulation
FREE	LIN	LOW	LFO with linear frequency modulation
FREE	LIN	HIGH	VCO with linear frequency modulation
RATIO	PHASE	DIV	Tracking oscillator with phase modulation and CV over division
RATIO	PHASE	MULT	Tracking oscillator with phase modulation and CV over multiplication
RATIO	LIN	DIV	Tracking oscillator with linear frequency modulation and CV over division
RATIO	LIN	MULT	Tracking oscillator with linear frequency modulation and CV over multiplication

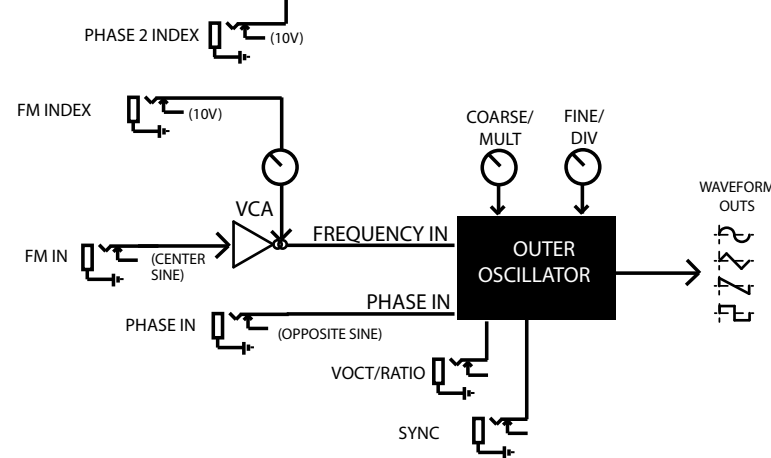
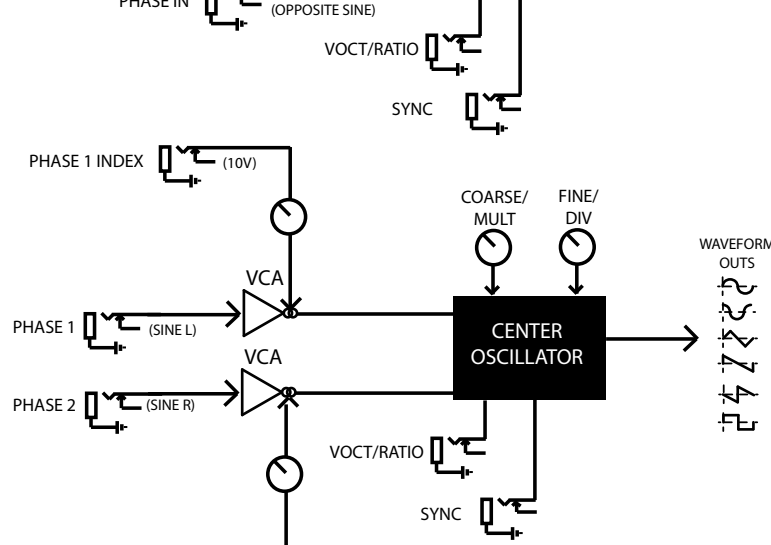
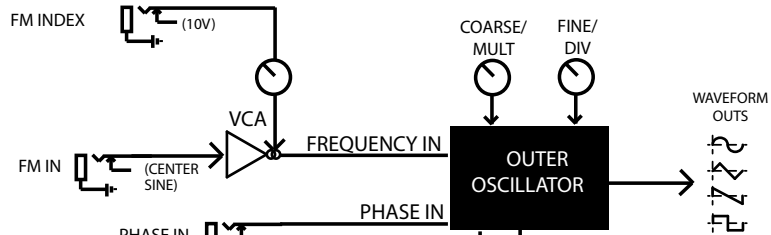
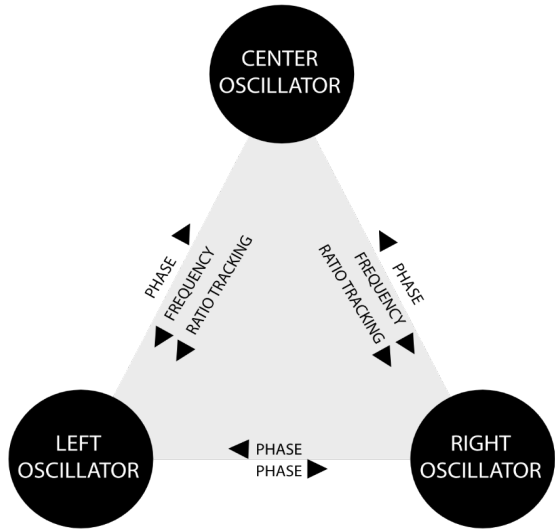
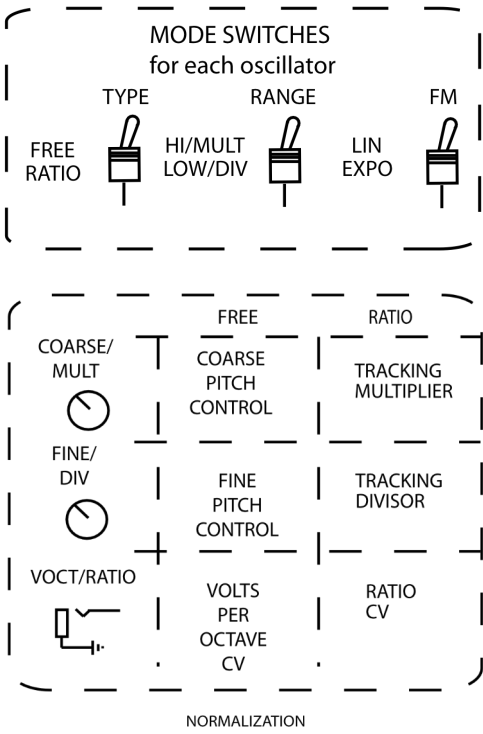


**Inputs** - Inputs affected by the FREE/RATIO state, works the same for each oscillator

INPUT	FREE	RATIO	notes
TRANPOSE	Global Volts per octave input, adds to all oscillators pitch	Has no effect	Affects all oscillators in free mode, including those in LFO mode
VOCT/RATIO	Volts per octave input	CV adding to multiplier or divider	Bipolar, can be used at audio rate
SYNC	Hard sync	Tracking input	threshold at 1V, tracks on rising edge

Modulation inputs are the same for the outer oscillators, but the inner oscillator has an extra phase input and index control (VCAs) on phase modulation instead of frequency

INPUT	RATIO	
PHASE	Phase input, breaks internal normalization	
PHASE INDEX	CV control over amount of phase, breaks normalization to 10V	Outer osc
FM	Frequency modulation input, expo or lin, breaks internal normalisation	
FM INDEX	CV control over amount of phase, breaks normalization to 10V	Inner osc



Recommended Starting Patches

<b>Rhythmic creaks:</b> -Set center oscillator to FREE, LOW -Outer oscillators to RATIO or FREE, LOW -Listen to the center oscillators sine and cosine outputs as a stereo voice -turn PHASE INDEX 1 and 2 all the way up -Slowly turn up turning up the PHASE CV controls on the outer oscillators -Experiment with the FM indexes and modes	<b>Stereo phase modulated oscillator:</b> -Set center oscillator to FREE, HIGH -Outer oscillators to RATIO -Listen to the center oscillators sine and cosine outputs as a stereo voice -turn PHASE INDEX 1 and 2 all the way up -modulate PHASE 1 INDEX and PHASE 2 INDEX with envelopes. -Experiment with the modes of the outer oscillators -Try using the SAW and COSAW outputs as a stereo output pair
<b>Arpeggiation:</b> -Set center oscillator to FREE, HIGH -Outer oscillators to RATIO, HIGH -Turn all modulation indexes down -Listen to the outer oscillators as a stereo voice -Experiment with the ratio controls -Send LFO or envelope CV to the VOCT/RATIO inputs of the outer oscillators -Try using the SAW and COSAW outputs as a stereo output pair	<b>Dubstep bass:</b> -Set center oscillator to FREE, HIGH -Left oscillator to RATIO -Listen to the center oscillator -PHASE INDEX 1 all the way up -Patch a clock into left SYNC input -Send a slow tempo related CV to the left VOCT/RATIO input -Experiment with cross modulating between the left and right oscillators
<b>Chords:</b> -Turn down all modulation -Mix together and listen to sine or triangle outputs of all three oscillators -Send Pitch CV to TRANPOSE input -Explore the modes, start turning up cross modulation	<b>Some tips:</b> -Phase modulate with the modulator a higher frequency than the carrier -Frequency modulate with the modulator a lower frequency than the carrier -Start with all cv and indexes down -Keep cross modulation low unless extremely noisy sounds are desired